# *Large Crawfish Algae Consumption vs. Small Crawfish Algae Consumption*

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## Abstract

The goal was to create an experiment that will discover whether a large or a small crawfish consumes more filamentous algae. One gram samples of filamentous algae were paired with each crawfish. The crawfish were separated according by mass into either large or small categories. Algae plays a vital role in the ecosystem. Algae is at the base of the ecosystem and if there is an excess, an algal bloom occurs which causes contamination and pollution. Organic matter makes up a larger proportion of crawfish diets when compared to animal material (Soucek & Taylor, 2010). The experiment was done to see how much algae crawfish consume, and potentially what part they could play in controlling algal growth. Knowing this, one can determine what size crawfish consumes more algae. The results suggest that smaller crawfish consume more algae.

## Introduction

Algae is at the base of the food chain, and therefore, an integral part of the ecosystem. In order to see the effects, this experiment studied eating habits of large and small crawfish. Plants generally dominate the crawfish diet (Perez-Bote, 2004). It has also been found that filamentous greens are reduced with the presence of crawfish (Dorn & Wojdk, 2004). On the other hand, if the water contains too much algae, eutrophication can occur which causes a dense plant life and death of animal life due to a lack of oxygen. The experiment should show how crawfish and algae together affect and control the ecosystem. This is important because algae has been shown to change and vary the ecosystem due to its role of being the base of food webs. (Lowe & Stewart, 2008). The hypothesis was larger crawfish requires more algae due to its size.

## Materials and Methods

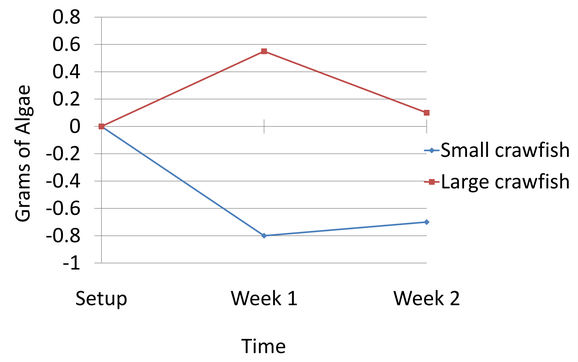
Six 13.25 liter containers were placed in a mesocosm at the Waco Wetlands. The experiment consisted of three trials. Each trial contained a container with a large crawfish and a container with a small crawfish, totaling six containers. Six crawfish were collected total. They were separated into large and small categories according to mass. A mass under two grams was considered a small crawfish while a mass greater than nine grams was considered a large crawfish. Each container was filled ¾ of the way with tap water. One gram of filamentous algae was placed in each container along with four mL of fertilizer (7-7-7) to help keep the algae alive. An aeration system was created and placed into each container in order to keep the water oxygenated. Algae was placed on a paper towel in order to eliminate as much water as possible, and then weighed. The algae was measured weekly for 3 weeks.

## Results

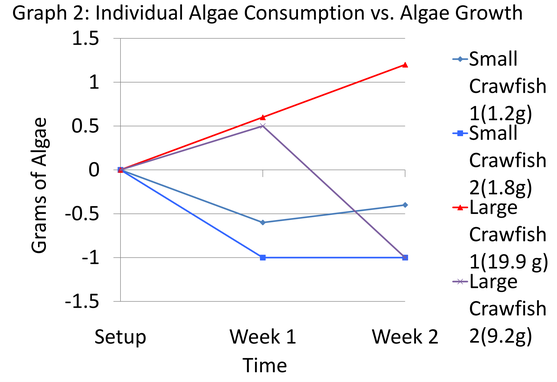
The graphs indicate the differences between the algae amounts during the experiment. The large crawfish stayed in the positive range. The small crawfish stayed in the negative range. Graph 1 shows the average of the algae consumed over the time period while Graph 2 shows individual crawfish consumption.

| | Setup | Week 1 | Week 2 |
|---|---|---|---|
| Small Crawfish 1(1.2g) | 0 | -0.6 | -0.4 |
| Small Crawfish 2(1.8g) | 0 | -1 | -1 |
| Large Crawfish 1(19.9 g) | 0 | 0.6 | 1.2 |
| Large Crawfish 2(9.2g) | 0 | 0.5 | -1 |

Graph 1: Average Algae Consumption vs. Average Algae




Graph 2: Individual Algae Consumption vs. Algae Growth




## Conclusion

Based on the results, it can be concluded that smaller crawfish consume more algae than larger crawfish. In the containers of the large crawfish, the algae showed growth while in the buckets with the small crawfish, there was a decrease in the amount of algae present. The results suggest that smaller crawfish are more herbivorous than larger ones. Suggesting they are in a state of growth, they need more nutrients for growth. This was a preliminary experiment, however if more crawfish were tested for a longer period of time, the results could possibly show a greater difference between large and small crawfish algae ingestion. The data did not support the hypothesis. The data showed that smaller crawfish consume more than large crawfish. By studying how much algae crawfish eat, this has the potential significance to show how much of an impact they have on keeping the growth of algae in balance with the rest of the ecosystem.

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